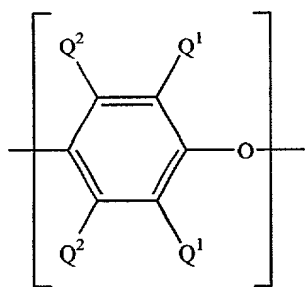


Claims

- [c1] 1.A method of preparing a conductive thermoplastic composition, comprising:
adding to a first feed port of an extruder about 20 to about 70 parts by weight
of a poly(arylene ether) and 0 to about 20 parts by weight of a first polyamide;
adding to a second feed port of the extruder about 20 to about 75 parts by
weight of a second polyamide, wherein the second feed port is downstream of
the first feed port; and
adding to the second feed port or a third feed port of the extruder about 5 to
about 40 parts by weight of a concentrate comprising about 5 to about 20
weight percent of a conductive carbon black and about 80 to about 95 weight
percent of a third polyamide, wherein the third feed port is downstream of the
second feed port;
wherein the extruder has a screw length to diameter ratio less than 38.
- [c2] 2.The method of Claim 1, wherein the concentrate is added to the second feed
port.
- [c3] 3.The method of Claim 1, wherein the concentrate is added to the third feed
port.
- [c4] 4.The method of Claim 1, wherein the extruder has a screw length to diameter
ratio less than 35.
- [c5] 5.The method of Claim 1, wherein the extruder has a screw length to diameter
ratio less than 30.
- [c6] 6.The method of Claim 1, wherein the extruder has a screw length to diameter
ratio less than 27.
- [c7] 7.The method of Claim 1, wherein the poly(arylene ether) comprises a plurality
of structural units of the formula



wherein for each structural unit, each Q^1 is independently halogen, primary or secondary C_1-C_8 alkyl, phenyl, C_1-C_8 haloalkyl, C_1-C_8 aminoalkyl, C_1-C_8 hydrocarboxy, or C_2-C_8 haloalkyl where in at least two

carbon atoms separate the halogen and oxygen atoms; and each Q^2 is independently hydrogen, halogen, primary or secondary C_1-C_8 alkyl, phenyl, C_1-C_8 haloalkyl, C_1-C_8 aminoalkyl, C_1-C_8 hydrocarboxy, or C_2-C_8 haloalkyl where in at least two carbon atoms separate the halogen and oxygen atoms.

[c8]

8.The method of Claim 7, wherein each Q^1 is methyl, and each Q^2 is independently hydrogen or methyl.

[c9]

9.The method of Claim 1, wherein the poly(arylene ether) has an intrinsic viscosity of about 0.2 to about 0.6 deciliters/gram as measured in chloroform at 25 ° C.

[c10]

10.The method of Claim 1, wherein about 30 to about 60 parts by weight of the poly(arylene ether) are added to the first feed port.

[c11]

11.The method of Claim 1, wherein the first polyamide, the second polyamide, and the third polyamide each comprise repeating structural units of the formula $-NH-R^1-NH-CO-R^2-CO-$

wherein R^1 and R^2 are independently C_2-C_{12} alkylene.

[c12]

12.The method of Claim 1, wherein the first polyamide, the second polyamide, and the third polyamide each independently comprise polyamide-6, polyamide-6,6, or a mixture thereof.

[c13]

13.The method of Claim 1, wherein the second polyamide comprises polyamide-6 and polyamide-6,6.

- [c14] 14.The method of Claim 1, wherein about 30 to about 35 parts by weight of the second polyamide are added to the second feed port.
- [c15] 15.The method of Claim 1, wherein the third polyamide comprises polyamide-6,6.
- [c16] 16.The method of Claim 1, wherein a portion of the poly(arylene ether) and a portion of the first polyamide are provided as a recycled poly(arylene ether)/polyamide composition.
- [c17] 17.The method of Claim 1, wherein the conductive carbon black has an average particle size less than about 200 nanometers.
- [c18] 18.The method of Claim 1, wherein the composition comprises up to about 1.8 weight percent of the conductive carbon black, based on the total weight of the composition.
- [c19] 19.The method of Claim 1, wherein the concentrate comprises about 7 to about 13 weight percent of the conductive carbon black.
- [c20] 20.The method of Claim 1, further comprising adding about 1 to about 26 parts by weight of an impact modifier to the first feed port.
- [c21] 21.The method of Claim 20, wherein the impact modifier is selected from the group consisting styrene-(ethylene-butylene)-styrene triblock copolymers, styrene-(ethylene-propylene) diblock copolymers, styrene-butadiene-styrene triblock copolymers, styrene-(butadiene-butylene)-styrene triblock copolymers, maleic anhydride-grafted ethylene-propylene-diene-monomer copolymers, ethylene-propylene rubbers, and combinations comprising at least one of the foregoing impact modifiers.
- [c22] 22.The method of Claim 1, further comprising adding about 0.1 to about 5 parts by weight of a compatibilizer to the first feed port.
- [c23] 23.The method of Claim 22, wherein the compatibilizer is selected from the group consisting of citric acid, maleic acid, maleic anhydride, malic acid, fumaric acid, and combinations comprising at least one of the foregoing

compatibilizing agents.

- [c24] 24.The method of Claim 1, wherein the composition after molding exhibits a volume resistivity of up to about 10,000 kilohm-centimeters.
- [c25] 25.The method of Claim 1, wherein the composition after molding exhibits a notched Izod impact strength measured at 23 ° C according to ISO 180 of at least about 15 kilojoules per meter-squared.
- [c26] 26.The method of Claim 1, wherein the composition after molding exhibits a notched Izod impact strength measured at 23 ° C according to ISO 180 at least 40% as great as that of the corresponding composition without conductive carbon black.
- [c27] 27.The method of Claim 1, wherein the composition after molding exhibits a Dynatup energy at maximum load measured at 23 ° C and 5 miles per hour according to ASTM D3763 of at least about 20 foot-pounds.
- [c28] 28.The method of Claim 1, wherein the composition after molding exhibits a Dynatup energy at maximum load measured at 23 ° C and 5 miles per hour according to ASTM D3763 at least 70% as great as that of the corresponding composition without conductive carbon black.
- [c29] 29.A method of preparing a conductive thermoplastic composition, comprising:
adding to a first feed port of an extruder about 30 to about 45 parts by weight of a poly(arylene ether), 0 to about 10 parts by weight of a first polyamide, and 1 to about 26 parts by weight of an impact modifier;
adding to a second feed port of the extruder about 25 to about 40 parts by weight of a second polyamide, wherein the second feed port is downstream of the first feed port; and
adding to the second feed port or a third feed port of the extruder about 10 to about 30 parts by weight of a concentrate comprising about 5 to about 18 weight percent of a conductive carbon black and about 82 to about 95 weight percent of a third polyamide, wherein the third feed port is downstream of the second feed port;
wherein the extruder has a screw length to diameter ratio less than 33.

[c30]

30.A method of preparing a conductive thermoplastic composition, comprising:
adding to a first feed port of an extruder about 33 to about 40 parts by weight of a poly(arylene ether) comprising 2,6-dimethyl-1,4-phenylene ether units, 2,3,6-trimethyl-1,4-phenylene ether units, or a combination thereof, about 4 to about 10 parts by weight of a styrene-butylene-styrene triblock copolymer, and about 4 to about 10 parts by weight of a styrene-(ethylene-propylene) diblock copolymer;
adding to a second feed port of the extruder about 30 to about 35 parts by weight of a polyamide comprising polyamide-6 and polyamide-6,6; and about 16 to about 20 parts by weight of a concentrate comprising about 7 to about 13 weight percent of a conductive carbon black and about 87 to about 93 weight percent of polyamide-6,6; wherein the second feed port is downstream of the first feed port;
wherein the extruder has a screw length to diameter ratio less than 27; and
wherein the composition after extrusion exhibits a volume resistivity of up to about 1,000 kohm-cm and a notched Izod impact strength at 23 ° C of at least about 40 kJ/m² measured according to ISO 180.